

**Optical Game Controller****ABSTRACT**

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A game controller having a moveable element and an imaging element that forms an image of a portion of the surface of the moveable element is disclosed. The moveable element has an optically readable pattern on a surface thereof and moves relative to a fixed position. The position of the moveable element at any given time is characterized by the  
10 relative position of the moveable element relative to a fixed reference position. The imaging element forms an image of a sub-area on the surface. The sub-area is determined by the relative position of the moveable element relative to the fixed position. A memory stores a map that specifies the readable pattern in each sub-area on the surface that can be imaged by the imaging element. A controller compares the image to the map to determine the position  
15 of the moveable element.